

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of January 5, 2007 is respectfully requested.

In order to make necessary editorial corrections, the entire specification and abstract have been reviewed and revised. As the revisions are quite extensive, the amendments to the specification and abstract have been incorporated into the attached substitute specification and abstract. For the Examiner's benefit, a marked-up copy of the specification indicating the changes made thereto is also enclosed. No new matter has been added by the revisions. Entry of the substitute specification is thus respectfully requested.

Previously-pending claims 9-17 were withdrawn in view of the election made in the response filed October 17, 2006, and elected claims 1-8 were examined in this application. In item 4 of the Office Action, the Examiner rejected elected claims 1-8 under 35 USC § 112, second paragraph, as being indefinite. In particular, the Examiner asserted that it was not clear what structure performed some of the functions recited in the previous-pending claims. Therefore, the previously-pending claims omitted essential structural relationships among the recited elements. However, as indicated above, the original claims have all now been cancelled and replaced with new claims 18-30, and all of the new claims read on the elected invention. Furthermore, the new claims have been drafted so as to fully comply with all of the requirements of 35 USC § 112. As a result, it is respectfully submitted that the Examiner's formal rejections under section 112 are not applicable to the new claims.

The Examiner rejected previously-pending independent claim 1 and dependent claims 2-4 and 6-8 as being anticipated by the EP '300 reference (European Publication 1058300); rejected claim 5 as being unpatentable over the EP '300 reference; rejected claim 8 as being unpatentable over the EP '300 reference in view of the Saito reference (US 2003/0041968); and rejected claims 4 and 5 as being unpatentable over the EP '300 reference in view of the JP '523 reference (Japanese Publication 10-012523). However, as noted above, the original claims have now been cancelled and replaced with new claims 18-30. For the reasons discussed below, it is respectfully submitted that the new claims are clearly patentable over the prior art of record.

A brief discussion of the arrangement and advantages of the present invention as recited in new independent claim 18 will now be provided below with reference to various portions of the present application. However, reference to these portions of the present application is provided only for illustrative purposes, and is not intended to otherwise limit the scope of the claims to any particular embodiments.

The substrate processing apparatus of new independent claim 18 comprises a substrate holder for holding and rotating a substrate substantially horizontally (see, for example, item 11 in Figure 1). As illustrated in Figures 2A-2C, the apparatus further comprises a supply nozzle 16 having an open end 16a for supplying a processing liquid onto a peripheral portion of an upper surface of a substrate which is to be rotated, and a suction nozzle 21 having a suction mouth for sucking the processing liquid on the peripheral portion of the *upper* surface of the substrate. The suction mouth of the suction nozzle 21 is located at the same radial distance from a center point of the substrate as the open end 16a of the supply nozzle 16, and the suction mouth of the suction nozzle is also located *adjacent to* the open end 16a of the supply nozzle 16 (see page 15, line 24 through page 19, line 16 of the original specification). Furthermore, the substrate holder is operable to rotate the substrate at a speed low enough to allow the supplied processing liquid to remain stationary on the upper surface of the substrate during rotation of the substrate (see page 17, line 23 through page 18, line 10 of the original specification).

As a result of this arrangement, the processing liquid can be accurately supplied only to the peripheral portion of the upper surface of the substrate, and can remain at that location for a relatively long length of time without flowing off of the wafer. Consequently, the amount of chemical liquid necessary for processing the substrate is minimized, and contamination to the chamber in which the substrate is processed is also minimized or eliminated (see page 4, lines 3-10 of the original specification).

The EP '300 reference discloses a *wafer edge* cleaning method and apparatus, in which liquid is supplied through absorbent material 21 to the *edge* of a wafer (see Figure 1 and column 4, lines 3-10 of the EP '300 reference). Therefore, the EP '300 reference does not disclose or suggest a supply nozzle having an open end for supplying a processing liquid onto a peripheral

portion of an *upper surface of a substrate*. Furthermore, the EP '300 reference teaches a rinsing nozzle 23 and/or a roller 15c for rinsing the liquid etchant supplied by the absorbent material 21. However, the EP '300 reference does not teach or suggest a *suction nozzle* having a suction mouth for sucking the processing liquid on the peripheral portion of the upper surface of the substrate. Therefore, the EP '300 reference also does not teach or even suggest the structural relationship between the suction mouth of the suction nozzle and the open end of the supply nozzle as recited in independent claim 18, including the suction mouth being located *adjacent to* the open end. Consequently, it is respectfully submitted that the EP '300 reference does not anticipate or even render obvious new independent claim 18.

The Saito reference discloses a substrate processing apparatus including an etching unit 2 as illustrated in Figures 2B and 2C. In particular, the etching unit 2 includes a liquid discharge pipe 4 for discharging waste liquid from a *bottom surface* of a substrate, and supply nozzles 3a, 3b, 3c each having an open end for supplying a processing liquid onto a peripheral portion of an *upper surface* of the substrate. Thus, the Saito also does not disclose or suggest a suction nozzle having a suction mouth for sucking the processing liquid on the peripheral portion *of the upper surface of the substrate*, and does not disclose or suggest a suction mouth which is located *adjacent to* an open end of a supply nozzle. Furthermore, the JP '523 reference teaches a gas liquid separator, but also does not disclose or suggest a supply nozzle and a suction nozzle arranged as recited in independent claim 18. Therefore, one of ordinary skill in the art would not be motivated by the Saito reference or the JP '523 reference so as to modify the EP '300 reference in order to obtain the invention as recited in new independent claim 18. Accordingly, it is respectfully submitted that new independent claim 18 and the claims that depend therefrom are clearly patentable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. However, if the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact the Applicant's undersigned representative.

Respectfully submitted,

Takayuki SAITO et al.

By: 

W. Douglas Hahm
Registration No. 44,142
Attorney for Applicants

WDH/akl
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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